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ASTRABAT Deliverable D8.3

ASTRABAT Website

WP8, T8.1

Technical references

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¹ PU = Public, PP = Restricted to other programme participants (including the Commission Services) , RE = Restricted to a group specified by the consortium (including the Commission Services), CO = Confidential, only for members of the consortium (including the Commission Services)

Versions

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vf	28/05/2020	CEA	Sophie Mailley

Glossary

Term	Definition
C&D	Communication and Dissemination

Disclaimer

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Abstract

This document reports on the development of the ASTRABAT website (<https://astrabat.eu/>). In particular, it describes its structure, layout and purpose as a communication and dissemination channel for project contents. The document also outlines the content management strategy and the approach to monitor the website performance over the course of ASTRABAT.



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1 Introduction

The goals of the ASTRABAT website are:

- To serve as main gateway to the project;
- To act as a communication and dissemination (C&D) channel (see Deliverable D8.1 for a description of the ASTRABAT C&D strategy and channels);
- To inform of project events and activities;
- To provide easy access to all ASTRABAT results, such as public deliverables and project publications.

The website was designed and developed by ICONS as ASTRABAT C&D leader with feedback from CEA. It was launched online in M5 at the following URL: <http://astrabat.eu/>. The domain @astrabat.eu was purchased by ICONS at the beginning of the project. The website language is English.

The website is managed by ICONS. It has been implemented with the open source **Wordpress** Content Management System. This ensures great flexibility of the website structure and the possibility to modify the website easily, even in the case of change of developers, owners, domains. All the specific features of the website are based on dedicated Wordpress plugins.

The website is meant to reach out to all ASTRABAT **stakeholder** groups (see Deliverable D8.1 for the list of stakeholder groups). For this reason, it consists of both technical and non-technical sections.

A **landing page** was designed and launched online in M3 to offer an online reference to the project and a contact point while the website was being developed, see Figure 1. The content of the landing page provided a concise overview of the ASTRABAT motivations and expected outcomes. The layout was based on the ASTRABAT visual identity (see Deliverable D8.1). The page already included some of the elements which were then incorporated in the website (contact emails, social media icons, subscription to the newsletter, acknowledgement of EU funding), see also Chapter 2.

The website will be maintained online for three years upon project completion to foster the exploitation of the ASTRABAT results.





New efficient Lithium batteries for electric vehicles

The transport sector is responsible for around one quarter of Europe's **greenhouse gas** (GHG) emission. **Electric mobility** must be the next transport mode to contribute to the EU overall goal to reduce GHG emissions by 80-95% by 2050. It is expected that e-mobility will represent 70% of the total rechargeable **Li-ion battery** cell market's value in 2022. At the same time, 70% of the EU electricity should be produced by **renewable energies**. Hence, the electric battery storage is vital in this transition to clean mobility and clean energy systems.

The ASTRABAT project will find a better Li-ion cell architecture with an all-solid-state electrolyte design suitable for the new high-energy electrode materials and mass production

The new ASTRABAT cell will enable:

- Higher **energy density** and power
- Increased **safety** and longer life cycle
- Larger operating **temperature** range
- **Lower cost** to reduce costs of electric vehicles

ASTRABAT started in January 2020 and will run until June 2023. The project is coordinated by the French Alternative Energies and Atomic Energy Commission (CEA) in France and run by a consortium of fourteen partners from eight countries (Belgium, France, Germany, Italy, Poland, Slovenia, Spain and Ukraine).

Read our [press release](#) on the project launch.

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Stay in touch with us!
[Subscribe to our newsletter](#) & follow us on social media!



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Figure 1: The ASTRABAT landing page.



2 Website structure and layout

The website design started in M3 upon publication of the ASTRABAT landing page, see Chapter 1. The layout was based on the project visual identity (see Deliverable D8.1).

Specific attention was paid to the user experience to facilitate the website navigation. The paths among the different pages were conceived to make the more technical information about ASTRABAT technologies easy to find for interested users, without crowding the website and allowing the less technical audiences to explore the more understandable sections.

The main sections of the website are as follows:

- **Homepage:** the main entry point of the website, see Figure 2. It provides a very concise description of the project goals which, combined with the ASTRABAT presentation video (to be released in M6 and included in the homepage by replacing the image on the page header), will allow new users to quickly familiarise with the project. A call-to-action button to discover more on ASTRABAT and linked to the "Project" page is present, as well as the latest updates from the "News" and "Upcoming events" pages. As these updates will occur on a regular basis, their display on the homepage will encourage users to visit the website multiple times over the course of ASTRABAT. This will help spread ASTRABAT contents and results. The social feed of the ASTRABAT Twitter account ([@astrabat](#)) is also included.
- **Project:** the main section illustrating ASTRABAT, see Figure 3 and Figure 4. It consists of the following sub-sections:
 - **About:** a non-technical overview of the project motivations and goals.
 - **Technology:** a technical description of the ASTRABAT research line and targets.
 - **Fellow projects:** the list of EU projects participating with ASTRABAT in joint clustering initiatives (see Deliverable D8.1). For each project, the following elements are displayed: logo, short abstract and link to their project website. Although already implemented at the time of writing, this sub-section will be made public once the websites of the fellow projects are online.
 - **Media kit:** a collection of the graphic materials released by ASTRABAT, such as the project logo and brand book (see Deliverable D8.1), flyer and roll-up.
- **Consortium:** an overview of the project partners. For each consortium member, the following element are displayed: company logo, link to corporate website, one contact person and a very short definition of their role in ASTRABAT.



- **Results:** a collection of the ASTRABAT public deliverables.
- **Publications:** ASTRABAT scientific publications. Although already implemented at the time of writing, this section will be made public once the first project publications are available.
- **News:** a collection of the news and editorial contents released by ASTRABAT. They will mainly focus on results, progresses, milestones achieved and presentations of ASTRABAT at events. Adopted formats will be journalistic articles, videos and news and press releases. An excerpt of the latest news is available on the homepage, to help users find and explore the news section.
- **Events:** a collection of events where ASTRABAT partners are present. Examples are: workshops, webinars, conferences, fairs. Each event has its own web page and URL to facilitate sharing.
- **Contacts:** it provides the following e-mail contacts: coordinator@astrabat.eu and info@astrabat.eu. The former allows users to reach out to the project coordinator, the latter to ask for generic information on ASTRABAT.

A menu is available on the header of the pages to facilitate navigation across the website. Finally, all pages also display links to:

- Project newsletter subscription and Fondazione iCons privacy notice (see Chapter 3);
- ASTRABAT social media channels: [Twitter](#), [LinkedIn](#) and YouTube (the YouTube channel will be opened in M6 for the publication of the ASTRABAT presentation video);
- Acknowledgment of EU funding.



ASTRABAT PROJECT CONSORTIUM NEWS EVENTS CONTACTS

New efficient Lithium batteries for electric vehicles

ASTRABAT will investigate and develop a new Li-ion cell architecture with an all-solid-state electrolyte design suitable for the use of new high-energy electrode materials and mass production.

[DISCOVER MORE](#)

Latest updates

21st International Conference Advanced Batteries Accumulators and Fuel Cells
UPCOMING EVENT
06-09 Sep 2020
Brno, Czech Republic

ASTRABAT: developing a new battery to boost Europe's electric mobility
PRESS RELEASE — 29 APR 2020
A new European project has been launched to design an innovative high-energy and safe, solid-state lithium-ion battery cell for the electric vehicle market and beyond

Tweet

ASTRABAT @astrabat
Can the #EUBatteryAlliance support the EU post-#COVID19 recovery?
Will projects on remain among top investment priorities?
Find @MarosSefcovic answers in the link below!
@ChargeTheFuture @IG3N_ZA @DefactoProject @EGVIA_EU @RechargeEurope @BESTmag_news @CARBAT_FETOPEN https://twitter.com/MarosSefcovic/status/1262800483145650182
May 25, 2020

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Figure 2: Homepage of the ASTRABAT website.



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ASTRABAT PROJECT CONSORTIUM NEWS EVENTS CONTACTS [in](#) [tw](#)

Home > Project

About the project

ASTRABAT is a three and a half years European project launched in January 2020. It aims to develop optimal Lithium-ion battery solutions for the increasing demands of the electric vehicle market in particular.

The goal is to fulfil Europe's need for a safe, high-energy, sustainable and marketable **battery for green mobility** that could be manufactured in Europe on a massive scale. To do so, the new ASTRABAT cells will enable:

SECTIONS
[About](#)
[Technology](#)
[Media kit](#)

Higher energy density and power **Increased safety and longer life cycle** **Larger operating temperature range** **Lower electric vehicle costs**

ASTRABAT is part of a broader drive by the European Union to make electric mobility become the next transport mode and contribute to the EU overall goal to **reduce greenhouse gas** (CHG) emissions by 80-95% by 2050 (currently, the transport sector is responsible for around one quarter of Europe's CHG emissions). It is expected that e-mobility will represent 70% of the total rechargeable Li-ion battery cell market's value in 2022 and that 70% of the EU electricity should be produced by **renewable energies**. Hence, the electric battery storage is vital in this transition to clean mobility and clean energy systems.

Technology

Li-ion batteries for electric vehicles suffer from several issues:

- Insufficient energy density to comply with expected electric vehicle autonomy of 500 km;
- Hazardous in safety due to strong battery thermal run away;
- Unsatisfactory power density to meet fast charge requirement;
- Lack of battery Giga-factories in Europe.

To overcome these issues, ASTRABAT will:

1. Develop materials for a solid hybrid electrolyte and electrodes enabling high energy, high voltage and reliable all-solid-state Li-ion cells;
2. Adapt the development of new all-solid-state batteries to a conventional process adopted for manufacturing electrodes in Li-ion cells;
3. Design an all-solid-state-battery architecture for the next generation of 2030 Li-ion batteries;
4. Define an efficient cell architecture to comply with improved safety demands;
5. Generate a new value chain of all-solid-state batteries, including eco-design, end of life and recycling.

How will ASTRABAT go beyond the state of art of solid-state electrolytes?

ASTRABAT hybrid electrolyte will be based on polymers (ORMOCER® and fluorocarbon polymers) and an inorganic filler and membrane (LLZO). These materials will tackle the generation 4a of cells using high voltage cathode materials, based on Nickel Manganese Cobalt Oxide (NMC) such as NMC622 and NMC81, and Si-based anode. All developed cells will be assessed following standard **safety protocols** and safety certifications will be performed.

For the ceramic LLZO material, an ionic conductivity of 0.4 mS/cm in the range temperature of 10°C - 50°C will be achieved via Al-doping or Ta-doping. This should enable a decrease of the **cell operating temperature** and render a **more efficient** electric vehicle. Moreover, an optimised ionic transport will be achieved by tailoring electrode-electrolyte percolation networks to reduce the ionic pathway length. This will be done by optimising the electrode formulation and by developing new processes to generate organised electrolyte structures.

Figure 3: First part of the Project section on the ASTRABAT website.



The improved impedance of the electrode-electrolyte interface will be achieved by developing an inorganic coating on NMC material, organic coating on LLZO and carbon coating on silicon. Different particle sizes of active electrode materials will be synthesised and will contribute to a **better harmonisation** of the material.

Short cycle life will be avoided thanks to material coatings on NMC that will reduce the capacity fading generated by interfacial reactivity of electrode material with the electrolyte. At the anode side, the Si particle size and carbon coating are also a source of improvement of electrode stability and reduction of irreversibility by solid electrolyte interface formation.

Check out this table to discover the expected KPIs of the ASTRABAT cell!

Developing materials for solid electrolyte and electrodes to achieve high energy density, high voltage and reliable all-solid-state Li-ion cells		
Electrolyte	Electrochemical window	0 - 4.5 V
	Ionic conductivity	0.4 mS/cm with solid electrolyte
Anode	Specific capacity	900 mAh/g with Si-based electrode in anolyte
	Number of cycles to SOH 90%	500 Cycles (validation test)
Cathode	Co ratio in NMC	Co ≤10%
	Practical capacity	210 mAh/g
	Upper cut off voltage	4.5 V/Li
	Number of cycles to SOH 90%	500 cycles

Processing techniques compatible with a large-scale manufacturing of cell and validation of a pilot prototype in relevant industrial environment	
Capacity of cell processed in ASTRABAT	10 Ah
Energy density	350 Wh/kg 1200 Wh/l
Solid electrolyte	Conductivity between 10 and 50°C 0.4 mS/cm

Developing the 2030's eco-designed generation P-type and E-type all-solid-state battery in pre-prototype		
Cell prototype	Charge to 90% SOC	10 C
	Power density for 10s pulses (regenerative braking)	> 10 000 W/kg (-30C)
Cost at cell level	< 100 €/kWh	
Number of cycles at 80% DoD in E-type	500 cycles	

Defining an efficient cell architecture to comply with improved safety demands		
Safety	Temperature of thermal runaway	> 150°C
		No flammable electrolyte, no leakage, no gas formation during cycling

Structuring the whole value chain of the all-solid-state battery, including eco-design, end-of-life and recycling	
End of life product	≥ 65% of recyclable compound

Media kit

Discover and download the ASTRABAT graphic materials.

[ASTRABAT BRANDBOOK](#)
15 MAY 2020 - PDF - 697.29 KB
Guidelines on the correct use of the ASTRABAT visual elements (fonts, colours, logos..).

[ASTRABAT LOGOS](#)
15 MAY 2020 - ZIP - 12.49 MB
All versions of the ASTRABAT logo in both the digital and printable formats.

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Figure 4: Second part of the Project section on the ASTRABAT website.



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3 Content management and project newsletter

Two key website-related activities are the management of the posted contents and of the ASTRABAT e-newsletter. Both are described in this chapter.

3.1 Content management

The website will act as C&D channel by making available to stakeholders the contents and materials prepared by the ASTRABAT consortium. Examples are: news and press releases, journalistic articles, videos, public deliverables, scientific papers and dissemination-oriented graphic materials such as a handbook and info-packs (see Deliverable D8.1 for a description of these products). Although ASTRABAT also leverages other C&D channels, the website has the peculiarity to serve as a **repository** of all public materials. As website manager on behalf of the consortium, ICONS will be in charge of uploading contents.

Over the course of the project, regular updates will mainly regard the “News” and “Events” sections, see Chapter 2. These updates will come in the form of posts created by ICONS with support from project partners in terms of content provision.

Effort will be made to keep texts simple (yet scientifically accurate) and thus understandable by the broadest possible audience.

3.2 Project newsletter

Users can subscribe to the ASTRABAT newsletter to receive regular updates on the project progress, results and events. A dedicated [subscription form](#) is available on the website.

The creation and sending of the newsletter issues, as well as the storage of the subscribers’ contact email, are managed via a dedicated Wordpress plugin. The plugin also enables the collection of statistical data on the performances of each newsletter issue in terms of e.g. number of reached users and open and click rates by the recipients.

To subscribe, users have to accept the GDPR-compliant [Fondazione iCons’ privacy notice](#). This informs users of their rights and explains how their data are managed and processed by ICONS. Users’ data are stored on the same server as the website and are protected via appropriate security measures. The privacy notice also informs of the cookies used by the website. Cookies can be accepted or refused by users accessing the website via a pop-up banner displayed at the bottom of the webpage.



4 Website dissemination and monitoring

ICONS will disseminate the website on the ASTRABAT social media channels, on external LinkedIn discussion groups and through a network of news multipliers (see Deliverable D8.1 for the list of such multipliers). News multipliers are portals and websites playing an important role in the circulation of both scientific and non-scientific information in the EU news circuit. They are key information gateways for journalists, media, researchers and the general public alike.

Project partners are expected to contribute to the website dissemination via the exploitation of their own C&D channels and stakeholder groups.

ICONS will be monitoring the performance of the ASTRABAT website over the course of the project. This activity is a crucial part of the overall C&D impact assessment strategy adopted for ASTRABAT (see Deliverable D8.1). Data will be gathered with Google Analytics. Examples of relevant KPIs are: number of visitors, number of page views and sessions, average time spent on pages and average session duration. Other interesting pieces of information are the most visited pages, the paths followed by users when navigating the website, the device used to access the website (computer, mobile phone or tablet) etc.

Reports on C&D activities (and hence on the website performance as well) will be included in Deliverables D8.11, D8.12 and D8.13. ICONS will also use the collected monitoring data to evaluate possible corrective actions to maximise the impacts on society generated through the project C&D activities.



5 Conclusions

The ASTRABAT website is the main portal to entice and inform stakeholders about project goals, results and developments. It will stay online beyond the project end and will serve as repository of the ASTRABAT key outcomes. The website is managed by ICONS and will be regularly updated. ICONS will also monitor the website performance as part of the C&D impact assessment strategy.

